

The remarkable fact is brought to notice that the term *sky-blue* is almost unknown in the ancient writings of any Asiatic people, *e.g.* in the Vedic hymns, in the Zend-Avesta, in the Old Testament, in Hebrew writings generally, and in Homer and Hesiod; the epithets applied to the sky being expressive of its vastness, depth, purity, brilliancy, &c., but not of its colour. A similar want of a precise colour-term is shown to exist in many modern barbarous languages. But it does not seem warrantable to conclude that *sky-blue* was a colour unknown to these peoples; indeed *sky-blue* pigments have been found (p. 37) at both Memphis and Thebes.

A part of Dr. Magnus's theory of the evolution of the colour-sense is that the eye acquired the power of recognising different colours in the order of their luminosity; but the order which he seems to assign (p. 71), *viz.* red, yellow, &c., is certainly not that of their luminosity. The physiological and emotional effects of colours on men and animals are noticed in this connection. Thus red is known to excite bulls and turkeys: the experiments of M. Paul Bert on the small crustacean *Daphnia* are quoted; when placed in a solar spectrum they congregate most thickly in the orange to green region, which is also the most luminous region. Goethe's speculations on the effects of colour on the emotions of mankind are noticed at length. A curious "colour-treatment" (*chromo-photérapie*) proposed for the insane is also mentioned, which consists in placing the patients amidst surroundings of a tint supposed to be capable of exciting healthful effects: thus red is said to excite, blue and violet to sadden, green to soothe. The results of this treatment do not seem to have been very definite (pp. 78, 79).

The comparative philology of colour-terms takes up—as might be expected—much of the work; the author has spared no pains in endeavouring to trace out the meanings of Homer's colour-terms by the help of the related words in other languages. As to the uncertainties of this process, take the words related to *blue* as an instance. Mr. L. Geiger's opinion is quoted (p. 50) that the modern European words *blue*, *blae*, *blau*, *blå*, *bleu*, &c. (English, Scotch, German, Danish, French), now meaning *blue*, meant *black* in early Europe, whilst another (p. 101) connects them with words conveying the idea of brightness, *e.g.* *briller*, *blanc*, *blink*, *bleach*, *blank*.

The author promises a further instalment of this essay, in which the evidence from the fine arts, pottery, and dyers' work, and that from morphology and physiology are to be set forth; also a full statement of conclusions.

ALLAN CUNNINGHAM (Major, R.E.)

OUR BOOK SHELF

The Journal of the Engineering Society of the Lehigh University, March, 1886.)

THE practice of forming engineering societies in universities where engineering is taught is an exceedingly good one, and should receive every encouragement and help from the authorities. In fact every college should have its society. The meetings give the students an opportunity of discussing interesting engineering works, and give them a greater interest in the subject-matter taught in the class-room. These junior engineering societies, if I may so call them, ought not to be only found in colleges, but all large engineering works should have a

society of their own, the members of which should include those of the pupils, apprentices, and men who are anxious to improve themselves by the reading and discussing of papers prepared in rotation by the members themselves. Visits to other works might also be arranged. No doubt the formation of such societies may seem very hard to accomplish, but in most works there will be found men willing and anxious to form such societies and to keep them going until their utility is recognised.

The *Journal* before us contains several articles of an interesting nature, the first being by Prof. Merriman on "The Internal Work and the Deflection of Beams"; the second article gives an account of "Boring the Big Aqueduct" for the New York water-supply from Croton Lake. We next have a short notice on technical education in Mexico, followed by a very good account dealing with "The Requisites of a Successful Engineer."

After notices on "Mine Water Formations" and "The Foundations of the Washington Monument," the *Journal* concludes with a condensed report dealing with the measurements necessary to ascertain "the velocity and discharge of the Lehigh River about Bethlehem."

Taken as a whole the contents of this *Journal* are disappointing from a professional point of view, Prof. Merriman's article on the deflection of beams being excepted. The descriptions are much too general and popular; the subjects are not treated with that accuracy demanded by an engineering article, and are written in a style more fitted for the columns of a daily paper than a journal published by an engineering society.

N. J. L.

Fresenius's Quantitative Analysis. Parts I. and II. Vol. II

Translated by C. E. Groves, F.R.S. From New Edition of Fresenius commencing in 1877. (No date.)

It is a great pity these books cannot be pushed forward much faster. The plan adopted by many German authors of sending out books in "Lieferungen" has some advantages, but generally these are more than balanced by the time allowed to elapse between each part. This slowness on the part of authors makes it somewhat unpleasant for a translator, who must of necessity be still somewhat later. In this particular instance, however, the translator has improved on the time by introducing or referring to methods not in the original, but it might have been carried further. The original does not contain anything about Victor Meyer's methods of vapour-density determination, and the translator has also refrained from noticing these methods. There may be some reason for this, but we think at least the methods might have been mentioned, as they are simpler to perform than any other, and do not fall behind any in accuracy.

The whole of Part I. and a small portion of Part II. is taken up with analysis of organic bodies; the remainder of Part II. is on the analysis of potable and spring waters, &c. If an index or table of contents had been added, it would have rendered the English edition more practical.

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]

[The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to insure the appearance even of communications containing interesting and novel facts.]

Protective Influence of Black Colour from Light and Heat

IN NATURE, vol. xxxiii. p. 559, a correspondent refers to the effect of blackening the skin round the eyes as a protection against the glare of strong sunlight. Probably the practice has good scientific grounds.

The shape of the orbit at once suggests the reflecting cone of a thermopile, with the eyeball centred on its axis in the position of the pile, but of course much less deeply placed. The cone is, in this case, oblique, the maximum slant side being internal, *i.e.* towards the nose, and the minimum slant side external. A plane through the outer orbital angle, and perpendicular to the axis, will be pretty nearly coincident with the tangential plane of the eyeball at the anterior end of its antero-posterior diameter, and there will be a considerable part of the nasal surface of the cone in front of that plane. This part will act as a reflecting surface, and concentrate the rays upon the eyeball. Probably variations of complexion will not much affect the reflecting power of this surface, seeing that the difference in the skin of black and of white races is mainly a difference in the amount of pigment in the rete mucosum, and not in the superficial parts of the epidermis.

It is evident that rays reflected from the ground, and from objects of no great altitude, are the rays which will have the greatest chance of striking the eye after reflection from the sides of the orbital cone. The direct rays of the sun in tropical countries will, during the hottest part of the day, be too nearly vertical to take this course. Now it would seem that it is in the case of intense light reflected from rocks, snow, &c., that the blackening has been found useful.

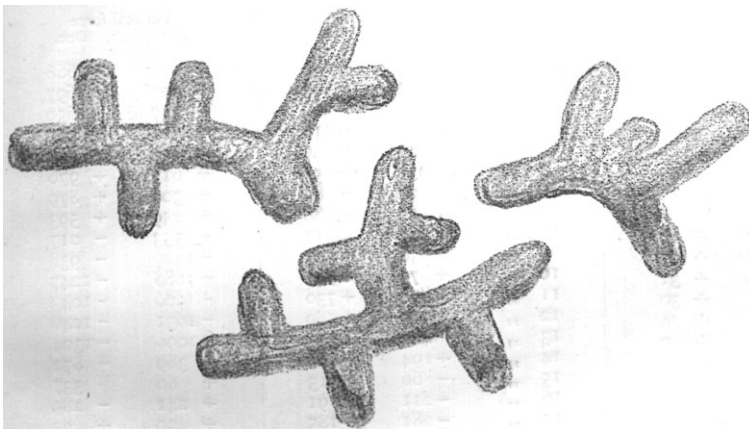
Whether to any appreciable extent the amount of light entering the eye is increased by the shape and projection of the orbit is a different question. For here it is not enough that the rays should be concentrated upon the eyeball. They must enter the pupil. Nevertheless, it would seem from observations made for another purpose upon the pupil-reflex, that the diameter of the aperture is increased by blackening the skin round the orbit, say by means of a piece of black cloth with an elliptical hole in it for the eye, the light of course being kept of constant intensity.

April 19

G. N. S.

On the Form of Mole-Hills Thrown up under Snow

MOLES must have an opportunity of getting to the surface here and there to dispose of the results of their excavations. When they meet with a deep-laid hard road they come out and cross it. When frost has bound the soil into an impenetrable cake they sometimes come out of the ground, and, travelling away to seek a place more suitable for their operations, are unable to find their way back or to burrow into the frozen soil in another place,



and so they get killed in considerable numbers. When there is a little snow on the ground, protecting it from the frost, the moles come to the surface as usual, and throw up mounds of earth under or through the snow. But, when deep-drifted snow has covered the ground, the mole-hills under it are found to be arranged in more or less symmetrical ridges of uniform height and breadth, as represented in the sketch. It would appear that the moles in these circumstances make galleries about the size of their own bodies on the surface of the turf in the bottom of the snow, into which they push the earth to be disposed of, finding it easier to make these small tunnels than to raise the usual mound of earth under the superincumbent snow-drift. The severe winter just over has caused the snow-drifts to lie long in

the north of England, where examples of this peculiar form of mole-hill may be commonly seen on the Fells.

Cambridge

THOS. MCKENNY HUGHES

Protective Imitation

I HAVE been watching for hours with great interest what I believe to be a very curious instance of protective imitation. A large old thrush has been, all that time, trying to make itself look like a serpent, and succeeding remarkably well. The object appears to be to frighten away a smaller and more active thrush—no doubt younger and with sharper ears—which seems to be getting all the worms. It appears afraid to attack its young rival, but runs towards it as if it meant to do so, and when the young one turns round and faces it, the old one crouches down so that nothing of it is seen but a crest-like back, two glaring eyes, the spotted throat, and a dark line formed by the front view of the beak and the lines at the corners of the mouth, which look very much like a serpent's mouth. If I saw the creature protruding from a bush or from the grass, I should certainly take it for a snake of some kind. The young bird looks alarmed and retreats, though just before it was ready to attack the other. No sooner has it recovered its courage and advanced to attack than the old one retreats, and resumes its serpent-like mask. There has been a little sparring in the air occasionally, just enough to show the nature of the feeling, but if allowed to do so the young one evidently would be content to feed quietly. The old thrush (I know it by a small white feather on one wing) is very much at home on this lawn, and seems to consider it as its own private domain, at all events as far as thrushes are concerned. A short time ago, when the ground was for a long time hard from frost and drought, this thrush moped about and seemed nearly starved, and at last fell upon two great clumps of yellow crocuses, and not only tore them to pieces, as if in a rage, but devoured them entirely, returning again and again to them, and gobbling up the yellow petals as a rabbit does a lettuce. At that time many birds that are usually too shy came down from the hills and strolled about the fields and lawns—snipes, plovers, &c. Two exquisite crested plovers (I think they are called) stalked about with graceful dignity for some days in a garden close by, and roosted in an old hen-house. The thrush touched no crocuses but the yellow ones, and no other bird did so. I should be glad to know if the resemblance to a serpent has been observed by any one else.

J. M. H.

Sidmouth, April 19

P. S.—It may be thought that the crouching is only a preparation for a spring, but it does not suggest that to the eye, and it is not followed by a spring. If it really is a fact and not a fancy, the instincts of imitation and of fear in this case must be a very ancient inheritance indeed.

Iridescent Clouds

THIS evening at sunset there was here a fine instance of iridescent clouds. About 7 I drew the attention of my companion to some remarkable clouds; three long arms of stratus of peculiar texture, like pulled-out cotton-wool, and of striking colour, blue-black and silver, stretched nearly to where the sun had gone down behind a hill. At 5 minutes past 7 a detached portion of this cloud assumed lovely iridescent colours like bright mother-of-pearl.

This gradually died away, but other portions assumed the same tints. At 7.30 the tints vanished. Wind, south to south-west.

Glencar, Kerry, April 26

J. G. GRENFELL

MADRAS MAGNETICAL OBSERVATIONS¹

WE are indebted for the present volume to Mr. Pogson, the Government Astronomer at Madras, from whose introductory remarks we learn that he is not yet at the end of his editorial labours.

¹ "Magnetical Observations made at Madras in the Years 1851-1855, under the Superintendence of Mr. W. S. Jacob." Edited by Mr. N. R. Pogson, Government Astronomer. (Madras: Lawrence Asylum Press, 1884.)